

Darryl D. Holm

Laboratory Fellow

Los Alamos National Laboratory

Group T-7, MS B284, Los Alamos, NM 87545

Telephone: bus. (505) 667-6398; home (505) 662-9452

email: dholm@lanl.gov, FAX:(505) 665-5757

<http://cnls.lanl.gov/~dholm/>

and

Professor of Applied Mathematics

Imperial College London

Mathematics Department

London SW7 2AZ

Telephone: bus. +44 (0)207 594 8531; home +44 (0)207 594 9611

email: d.holm@imperial.ac.uk, FAX:+44 (0)207 594 8517

<http://www.ma.ic.ac.uk/~dholm/>**Education**

- B.S. in Physics, University of Minnesota (1967)
- M.S. in Physics and Mathematics, University of Michigan (1971)
- Ph.D. in Physics, University of Michigan (1976).

Employment History at Los Alamos National Laboratory

- 1988-present, Laboratory Fellow, Mathematical Modeling and Analysis Group (T-7)
- 1985-1988, Deputy Group Leader, Mathematical Modeling and Analysis Group (T-7)
- 1983-1985, Staff Member, Mathematical Modeling and Analysis Group (T-7)
- 1982-1983, Acting Director, Center for Nonlinear Studies (CNLS)
- 1972-1983, Staff Member, Theoretical Design Group (TD-2/X-2).

Fellowships, Honors and Professional Activities

- 2003 Royal Society of London Wolfson Award for Research Merit (Five Years)
- 1997 Los Alamos National Laboratory Achievement Award.
- 1997 Senior Assessment Panel, National Science Foundation, Division of Mathematical Sciences, INTERNATIONAL ASSESSMENT OF THE US MATHEMATICAL SCIENCES
- 1997 UC Visiting Scholar, UCSC Mathematics Department, Santa Cruz, CA, January-May.
- 1996 Scientific Advisory Board, Isaac Newton Institute for Mathematical Sciences, research programme in THE MATHEMATICS OF ATMOSPHERE AND OCEAN DYNAMICS, Cambridge University
- 1995 Co-chair, CNLS 1995 Conference on Nonlinear Phenomena in Ocean Dynamics
- 1990 Lecturer, ENRICO FERMI SCHOOL OF PHYSICS, *Nonlinear Topics in Ocean Physics*
- 1988-present, Los Alamos National Laboratory Fellow
- 1984 National Award of Excellence for Significant Contribution to the Nuclear Weapons Program
- 1984 Los Alamos National Laboratory Distinguished Performance Award

Patents

- UNITED STATES PATENT # 6,157,762 patents the idea of using nonlinear amplifying loop mirrors (NALMs) to stabilize, shape and regenerate optical pulses in fibers at high bit rates. The idea treats the pulse propagation and re-amplification process as an iterated mapping. For details, see I. Gabitov, D. D. Holm, B. Luce and A. Mattheus, *Optics Lett.* **20** (1995) 2490-2492.

Books

- *Quantum Chaos: Crossover Time in Quantum Boson and Spin Systems*,
G.P. Berman, D.D. Holm and E.N. Bulgakov, Springer Lecture Notes in Physics, Vol. **m21**, Springer-Verlag (1994).
- *Hamiltonian Structure and Lyapunov Stability for Ideal Continuum Dynamics*,
D.D. Holm, J.E. Marsden and T.S. Ratiu, University of Montreal Press (1986).

Selected Books Edited

- *Nonlinear Phenomena in Ocean Dynamics*,
D.D. Holm, L. Margolin and R. Malone, *Physica D*, **98**, (1996), 1–501.
- *NEEDS '94 Proceedings*,
A.R. Bishop, D.D. Holm and V.G. Makhankov, World Scientific (1995).
- *Advances in Fluid Turbulence*,
G. Doolen, R. Ecke, D.D. Holm and V. Steinberg, *Physica D*, **37**, (1989), 1–564.
- *Nonlinear Systems of Partial Differential Equations in Applied Mathematics*,
D.D. Holm, J.M. Hyman and B. Nicolaenko, Lectures in Applied Mathematics,
Volume 23–Parts 1 and 2, AMS, Providence (1986).

Journals Edited

- *Physics Letters A*, Nonlinear Science section, Founding Editor, 1986–1994.
- *SIAM Journal of Dynamical Systems*, 2001–Present

Selected Recent Publications [Reviews of over 100 other papers may be found at <http://www.ams.org/mathscinet/> by searching on Holm, D*]

1. *Mean effects of turbulence on elliptic instability in fluids.*
B.R. Fabijonas and D.D. Holm, *Phys. Rev. Lett.* **90** (12) (2003) 124501-4.
2. *Averaged Lagrangians and the mean dynamical effects of fluctuations in continuum mechanics.*
D.D. Holm, *Physica D* **170** (2002) 253–286.
3. *Kármán–Howarth theorem for the Lagrangian averaged Navier-Stokes alpha (LANS- α) model.*
D.D. Holm, *J. Fluid Mech.*, **467** (2002) 205-214.
4. *Transient vortex events in the initial value problem for turbulence.*
D.D. Holm and R.M. Kerr, *Phys. Rev. Lett.* **88** (24) (2002) 244501-4.
5. *Toward an extended-geostrophic Euler–Poincaré model for mesoscale oceanographic flow.*
J.S. Allen, D.D. Holm and P.A. Newberger.
In *Large-Scale Atmosphere–Ocean Dynamics 1: Analytical Methods and Numerical Models*. Editors J. Norbury & I. Roulstone, Cambridge Univ. Press: Cambridge, pp. 101–125 (2002).
6. *The Navier-Stokes-alpha model of fluid turbulence.*
C. Foias, D.D. Holm and E.S. Titi, *Physica D*, **152** (2001) 505-519.